

A curious modification in the cells of the leaf is seen sometimes in some species of *Oxalis*. In plants grown in well-shaded spots the cells of the palisade parenchyma are not so much elongated as in those exposed to more light, but are more conical. In the beech too a similar difference is noted. In the sun the leaf is smaller and thicker, and has several layers of palisade parenchyma, while in the shade it is large, but thin, and the palisade layer is single.

Looking still at terrestrial plants, the general character of the vegetation in different regions illustrates well the general correspondence between environment and structure. In the tropics we find vegetation luxuriant, huge trees with evergreen leaves, masses of interlacing climbers, a great tendency of the smaller plants to become shrubby, even some annuals simulating the bushes of temperate regions; the presence of palms, tree-ferns, &c. Higher in latitude these disappear, bushes are more numerous; the trees become less luxuriant and more compact, the leaves smaller and more rigid; annuals are found in larger proportion, while mosses and lichens make their appearance. Still higher, where the influence of winter begins to be felt, the trees have as a rule deciduous leaves, which do not cover them for more than half the year. Where the leaves remain evergreen, as in the Coniferae, they are specially constructed to resist cold, being strongly cuticularised and altered in form so that the ratio of surface to bulk is much lessened. In the pines especially they are much elongated, becoming almost needle-like in shape. Their structure is adapted especially to check loss of water by evaporation, and to protect the delicate parenchyma of the interior from the access of the cold.

Various modifications of structure accompany also a parasitic habit of life. Here the effect of the environment must be taken to include all the various interferences with the normal habits of plants brought about by the changes in the mode of nutrition which the parasite now pursues. The modifications will be seen to be greater the more complete the parasitism. We may consider what are perhaps the most striking cases, those found among flowering plants. Of these we have certain Scrophulariaceae which show but little modification. They take only part of their nourishment from their hosts, being furnished with means of living exactly like other plants. The dependence of the different species of *Orobanchae* on the host is more complete. The outward form of the plant is there; the long stem, bearing small leaves. In accordance with the mode of nutrition, all the food being absorbed from the host, the power of absorbing food or obtaining energy from without the latter has gone; the leaves contain no chlorophyll, and are consequently brown and shrivelled. In *Cuscuta* the process of degradation has gone still further, even the leaves having disappeared. The degradation does not affect merely the vegetative structure, but the reproductive organs also suffer, as may be seen in the common mistletoe. This change, however, seems only incidentally to be connected with the environment, being rather the result of the disturbance of the constitutional equilibrium brought about by the changes in nutrition.

A comparison of lower forms of parasitic habit with others which, though about as high in the scale, do not depend on a host for support, reveals similar degradation brought about by the nature of the mode of life. Their power of independent growth has much decreased, their cells often appear to contain no nuclei, or these are made out with difficulty; they have no chlorophyll, nor any of the other colouring matters which are present in the non-parasitic forms.

Some curious modifications of structure are associated also with different climbing plants. These are not of so general a nature as those already alluded to, being noticeable only on particular species. In *Ampelopsis hederacea*,

and in *A. Veitchii* the curved tips of the tendrils, after touching a surface, form adhesive disks, which secrete and pour out a resinous cement which attaches the tendril to the surface. *Bignonia capreolata* has a similar but more elaborate development, while *Ficus repens*, which climbs like the ivy by rootlets, exudes similar material from its rootlets, this being somewhat of the nature of caoutchouc.

Not only the vegetative parts of plants thus exhibit modifications of structure according to the nature of their environment, but the same thing can be seen especially with regard to the structure of the reproductive organs. The ways in which these are adapted to different modes of fertilisation would however pass far beyond the limits of this article.

NOTES

PROF. MELSENS, the distinguished chemist, has died at Brussels, at the age of seventy-two.

By the death of the Rev. W. W. Newbould, F.L.S., which took place on April 16, at Kew, at the age of sixty-seven, a figure has passed away very familiar to the frequenters of the meetings and library of the Linnean Society, the British Museum herbarium and reading-room, and the herbarium at Kew. At the time of his student-days at Cambridge, where he was a pupil of Prof. Henslow, Mr. Newbould acquired a love of botany, which became the recreation, and latterly the pursuit, of his life. His interest was, however, confined to a study of our native British plants, the limitation of the species, and especially their geographical distribution. Several of our local county floras owe much to his co-operation; and of some particular groups of plants he had a very exact knowledge. But his speciality was an intimate acquaintance with the botanical bibliography of this country; in his knowledge especially of the older literature he was almost unrivalled.

MANY will regret to learn of the death of Thomas Edwards, the Banff naturalist, so well known through his *Life* by Mr. Samuel Smiles. Edwards was born on Christmas Day, 1814, at Gosport, Portsmouth, where his father, a private in the Fifeshire Militia, was stationed after returning from the Peninsular War. Early in life Thomas Edwards showed indications of a great love of animals, insects, and creatures of every description. He made extensive excursions in search of specimens, and many amusing anecdotes are told to illustrate his extreme fondness for even the most repulsive subjects in the animal creation. At eleven he was apprenticed to a shoemaker, and at the age of eighteen he had undergone many severe trials. He joined the Militia, but his love of insects proved fatal to his military ambition. In his twentieth year Edwards went to work as a shoemaker at Banff, and there he pursued so successfully his researches in natural history that he added a great deal to his scientific store of knowledge. For fifteen years he carried on the most of his researches by night, and he had many narrow escapes by reason of the eagerness with which he pursued his object. He completed, however, a splendid collection, and in 1846 exhibited it in Aberdeen. The exhibition was a failure, and he had to sell the collection for 20*l.* to defray the expenses. He then set to work to form another collection, and was not successful. His researches added greatly to the knowledge of natural history, as he embodied his new discoveries in papers written to scientific magazines. In 1866 Edwards was elected a member of several scientific societies. Latterly he had acted as Curator of Banff Museum. After the publication of his biography by Smiles, Edwards's genius was publicly recognised by a presentation of 333*l.* made to him in Aberdeen, and he was awarded by the Queen a pension of 50*l.* a year.

A CORRESPONDENT writes :—Under the name of the “phonophore” a remarkable telephonic invention is about to be introduced to public notice by Mr. Langdon Davies. The name is given to a contrivance which, while absolutely a non-conductor of continuous electric currents, still allows of the passage or transmission of rapidly-alternating currents such as correspond to sounds in vocal and harmonic telephony. The “phonophore” itself may be regarded as at once a condenser and an induction coil. It consists essentially of two insulated wires laid side by side, twisted together and wound up upon a bobbin, one end of each wire being completely insulated. Regarded as a condenser, its capacity is very feeble indeed. Regarded as an induction coil, it will be seen that neither the primary nor the secondary forms a closed circuit. Yet it transmits telephonic speech perfectly. It follows that Mr. Langdon Davies has solved the problem of telephoning on an open circuit. But the real object of the invention is to enable telephonic messages, including both vocal and harmonic under that name, to be transmitted through the ordinary telegraph-wires without interference with or from the telegraphic messages that are simultaneously passing through the wires. For many months Mr. Langdon Davies has been at work experimenting upon the lines of telegraph-wire running across the county of Kent. He has devised a whole series of new telephonic apparatus in which not only the induction-coils of the transmitters, but also the bobbins of the receivers, are replaced by open-circuit phonophore coils. Apart from its purely technical value, the new instrument presents several points of great scientific interest, and opens up sundry new problems to the mathematical physicist.

A NEW method of reading small angular deflections, as, for example, those of galvanometers, has been devised by Dr. D'Arsonval. It may be briefly described as the inverse of Poggendorff's (subjective) method. Usually the objective of the observing telescope forms at the conjugate focus a diminished image of the object—the scale as reflected in the mirror. Dr. D'Arsonval places the scale—a small one, reduced by photography, giving tenths and twentieths of a millimetre—at this conjugate focus, and obtains a magnified image of it reflected in the mirror, and situated above the objective. This enlarged image, which is enormously displaced for small angular movements of the mirror, is again observed by an eyepiece bearing the usual cross-wires.

THE annual meeting of the Iron and Steel Institute has been arranged to take place in London on the 12th, 13th, and 14th of May next. On the first day of the meeting the President (Dr. Percy, F.R.S.) will deliver an opening address. The Council have decided to present the Bessemer Gold Medal to Mr. Edward Williams, of Middlesbrough, who was for many years connected with the Dowlais Company, and Bolckow, Vaughan, and Company, in recognition of his services to the Institute and to the iron trade generally. The programme embraces a list of fifteen papers, four of which are adjourned from the meeting held in Glasgow last autumn, while eleven are entirely new papers. The subjects dealt with include the manufacture of tin plates (which is still, in spite of recent efforts of the Germans and Americans to secure a portion of the trade, an almost exclusively English industry); American blast-furnace practice; the tenacity of steel wire; the cost of blow-holes in open-hearth steel, by which the strength and reliability of that metal is affected; a neutral lining for metallurgical furnaces; the composition of cast iron; the use of wrought-iron conduit pipes; the manufacture of chrome steel; the endurance of steel rails; the microscopical structure of steel; and certain descriptions of Indian castings.

THE Institution of Mechanical Engineers will hold its next general meeting on Thursday, May 6, at 7.30 p.m., and Friday,

May 7, at 3 p.m., at the Institution of Civil Engineers, 25, Great George Street, Westminster. The papers to be read are: “On the Distribution of the Wheel Load in Cycles,” by Mr. J. Alfred Griffiths, of Coventry; “On the Raising of the Wrecked Steamship *Peer of the Realm*,” by Mr. Thomas W. Wailes, of Cardiff; “On Refrigerating and Ice-Making Machinery and Appliances,” by Mr. T. B. Lightfoot, of London; “Notes on the Pumping-Engines at the Lincoln Water Works,” by Mr. Henry Teague, of Lincoln.

MR. CUTHBERT E. PEEK's Second Report of the Meteorological Observatory he established at Rousdon, Devon, in the end of 1883, has reached us, and it shows in several respects an improvement on the First Report. The weather notes of the months, while retaining their popular character, are now fuller and more precise, and form, so far as can be expected from the records of a single station, a very serviceable account of the weather of the year. A comparison of the weather forecasts of the Meteorological Office with the actual weather experienced at Rousdon continues to form part of the regular work, with the result that for 1885 the reliable forecasts for this part of England were 11 per cent. above that of 1884. Some interesting observations are made regarding sea-fogs and their extension inland, for observing which the Rousdon Observatory is well situated. A useful table is added to the Report in which the months are grouped respectively in order of frequency of sea-fogs, of mean wind velocity, of duration of bright sunshine, of rainfall, and of temperature; and we are glad to see that the mean temperatures of the months are included in the Report. We still, however, desiderate the monthly means for atmospheric pressure and humidity, and certain other details, which, as they are indispensable to such publications, Mr. Peek will, no doubt, include in future issues of his reports.

THOSE interested in the Daily Weather Reports of the Meteorological Office will have noticed with satisfaction the addition, since April 7, of a paragraph headed “Continental Information,” which details the general features of the weather over the Continent on the previous day, taken from the data of the Daily Continental Weather Reports. With this greatly extended field of observation, not only is the weather of Europe generally brought more or less vividly before us, but a much clearer explanation is afforded of the more important weather changes occurring in the British Islands than can be given by weather maps covering a more restricted area. It is evident that much assistance would be rendered in framing forecasts of weather if daily telegrams were received from additional Continental stations. The immense importance of this extension will be seen by a reference to the recent anticyclonic areas of high pressure over Russia, often extending westwards through Scandinavia to the north of the British Islands, in connection with the low pressures at the time over southern and southwestern Europe, as the immediate cause of the past hard winter (see NATURE, vol. xxxiii. pp. 447-48). Good results may fairly be expected to follow, as the area embraced by the stations increases in extent and in height through the atmosphere.

A CORRESPONDENT points out that the meteorological station at Sonnenblick, near Salzburg, 10,170 feet high, is not the highest in the world, that on Pike's Peak, Colorado, U.S., being 14,134 feet high.

THE various elevated meteorological stations of Europe, with their respective heights in metres, are thus given by Dr. Breitenlohner, the Director of the Observatory at Sonnenblick, near Salzburg, in an article in the last number of the *Mittheilungen* of the Vienna Geographical Society :—Italy—Monte Cimone, Apennines, 2162; Etna, Sicily, 2900. France—Puy-de-Dôme, Auvergne, 1463; Pic de l'Aigal, Cevennes, 1567; Mont Ventoux, Cottian Alps, 1960; Pic du Midi, Central Pyrenees,

2877. Switzerland—Säntis, Appenzell, 2500. Great Britain—Ben Nevis, 1418. Germany—Brocken, Harz, 1141; Wendelstein, South Bavaria, 1860. Austria—Schafberg, near Ischl, 1776; Hoch-Obir, Carinthia, 2047; Sonnenblick, Salzburg, 3103. These heights are taken from the sea-level.

FOR the first time the Government of the Straits Settlements has published in the official *Gazette* a separate meteorological report on the result of observations taken in the three settlements—Singapore, Malacca, and Penang—comprising atmospheric pressure, temperature, wind, rainfall, &c. The statistics, which are edited by Dr. Rowell, embrace the year 1885. Carefully compiled tables of observations and four charts are attached to the report.

At a recent meeting of the Russian Archæological Society, Prince Putiatin reported his important discovery near the Bologne railway station (half way from St. Petersburg to Moscow) of an image of the constellation of Ursa Major engraved on a grindstone of the Stone period. A similar discovery, as is known, had already been made near Weimar in Germany.

THE sixteenth annual report of the Wellington College Natural Science Society is satisfactory as showing that the society is pursuing its useful work with much success. A considerable number of lectures on various scientific topics were delivered during the session, one of them being by Prof. Flower, and the usual phenological and meteorological reports are added. The value of such societies as these in connection with our public schools is obvious, and it is only to be wished that the list of school natural history associations were a much longer one. At present, we believe, there are only nine in all—Wellington, Winchester, Cheltenham, Marlborough, Clifton, Rugby, Dulwich, Haileybury, and King Edward's, Birmingham. Neither Eton nor Harrow, it will be noticed, is on the list, although both are favourably situated for the purpose.

A CORRESPONDENT at Gorebridge writes to the *Scotsman*:—On Thursday week (April 8), at twenty minutes past twelve, a slight shock of earthquake was felt in this locality. The low rumbling and vibration were felt by your correspondent quite plainly, though at first I did not put it down to its real cause. Afterwards I found that the miners employed in Lord Lothian's Newbattle pits, about a mile to the westward, had been alarmed by loud explosions and vibration of the strata in which they were employed. In East Bryans pit, a mile further to the north-east, the miners had a like experience, being also of the belief that an explosion had occurred in the workings. In the villages of Cowdengrange and Newtongrange the shock was felt most distinctly, houses and furniture appearing to oscillate, and the crockery in some instances falling from the shelves. The phenomenon lasted for about five seconds, travelling from east to west, but appears to have been confined to the low range known as the Roman Camp. About half-past twelve on Sunday morning a shock of earthquake was distinctly felt in Comrie and neighbourhood, as well as in St. Fillans district. Several of the inhabitants state that they were awakened by the peculiar tremor, and that there was a dull heavy sound at the time of the shock, resembling distant thunder. The vibration apparently passed from the north-west towards the south or south-east.

THE last number of Prof. Caporali's *Nuova Scienza*, which continues to attract general attention on the Continent, is of a somewhat iconoclastic character. After dealing with the inherent difficulties and contradictions of Prof. Sergi's materialistic doctrines, it proceeds to attack with its customary vigour and learning the modern school of metaphysicians, who study the mental and outward phenomena of nature from the subjective instead of the objective stand-point. Kant himself is not spared,

and it is argued that, were his views accepted regarding the negative character of the concept of space, all progress in positive science would be arrested. No induction could be made from the known to the unknown, because nothing would ever be known with certainty, not even the very ground on which we stand. The followers of these idealistic theories are compared to mariners navigating a shoreless ocean, and engulfed at last in a sea of phenomenalism and pure scepticism. Crude materialism and idealism being thus both set aside, Prof. Caporali returns to his own theory of the universe, which aims at a complete reconciliation of the psychic and mechanical views of material and biological evolution from the atom to the last outcome in the human intellect.

THE French Minister of Commerce has decided, subject to the approval of scientific men and specialists, to erect, either at the entrance, or at some other part of the Paris Exhibition, the gigantic metallic tower invented by M. Eiffel, the mechanical engineer. It will be 300 metres in height, and entirely constructed of iron. It will rest on five pillars, forming four immense arcades, lofty enough to exceed in height the towers of Notre Dame. On the summit of the tower will be erected an electric light-house, and a terrace to which visitors will be admitted. The tower is expected not only to be an extraordinary source of attraction to the building, but to render important services to science. It is suggested that meteorological and astronomical observations will be made at the summit under entirely novel conditions. An electric signal, placed on the summit of the tower, may be seen in clear weather at Dijon—a fact which will give the erection great importance in connection with military signalling and national defence.

AN interesting account of the latest information concerning the former bed of the Amu-Daria River was recently given by Baron Kaulbars before the Russian Geographical Society. He ascribes the alteration of the course of the river between Kilik and the Khiva oasis principally to the terrace-like character of the locality along which it runs; and, secondly, to the softness of the strata of the bed at the point where the river leaves the mountains. The strata are washed off, and their remains precipitated on a slightly inclined slope of the Chardjui oasis, producing periodical inundations. Consequently, reeds are growing, and lakes are formed along the bed of the river as the course of the water filtering through the reeds becomes slower and slower. Finally, the lakes, increasing in size and number, reach the edge of the terrace, overflow it, and open a new course for the river along another slope.

WITH reference to a communication which recently appeared in *NATURE* respecting a Fishery Board for England, and the remark that there is no Fishery Board in Norway, a correspondent writes that, though there is no Fishery Board in Norway, there is a General Inspector of Fisheries, Prof. A. Landmark, and that the Government have just appointed a Board consisting of three members, who shall be practical men, knowing the best markets, &c., which would be of benefit to the Norwegian fisheries. We ought to add that the reports and suggestions recently issued by the Norwegian Inspector of Fisheries contain many valuable hints respecting the salmon- and trout-fishing in Norway, and the Inspector seems fully alive to the necessity of enacting as stringent fishery laws for Norway as those in force in this country.

IN the year 1882-83 the Norwegian Inspector of Fisheries imported at the public expense a parcel of ova of the American trout (*Salmo fontinalis*), with a view to introduce this fish into Norwegian waters, and the result has been so satisfactory that last autumn one of the hatching establishments near Christiania had some 30,000 young fish to offer for sale, which were then about two and a half years old. The result appears to have

been welcomed with great satisfaction in Norway, as it proves that this fish is capable of increasing in almost stagnant waters, where the Norwegian trout cannot exist, though its size is smaller. As an example of the success of this experiment it may be mentioned that the Norwegian Inspector of Fisheries, Prof. A. Landmark of Christiania, offers these ova at ten shillings per thousand.

THE additions to the Zoological Society's Gardens during the past week include a Garnett's Galago (*Galago garnetti*) from West Africa, presented by the Rev. W. C. Porter; a Grey Ichneumon (*Herpestes griseus*) from India, presented by Mr. James B. Bevington; a Common Badger (*Meles taxus*), British, presented by Mr. E. Gully; a Kestrel (*Tinnunculus alaudarius*), British, presented by Mr. Bateson-de-Yarburgh; six Barbary Turtle Doves (*Turtur risorius*) from Africa, presented by Mr. Richard Seyd, F.Z.S.; a Robben Island Snake (*Coronella phocorum*) from Robben Island, South Africa, presented by the Rev. G. H. R. Fisk, C.M.Z.S.; a Pale-headed Tree Boa (*Epicrates angulifer*) from Cuba, presented by Miss M. Hunt; an Ogilby's Rat Kangaroo (*Hypsiprymnus ogilbyi*), a Roseate Cockatoo (*Cacatua moluccensis*) from Australia, three Poë Honey-eaters (*Prothemadera nove-zealandie*), a Huia Bird (*Heterolocha gouldi*), five — Gannets (*Sula* —) from New Zealand, deposited; two Collared Fruit Bats (*Cynonycteris collaris*), born in the Gardens.

GEOGRAPHICAL NOTES

THE last number of the *China Review* contains the first part of an article by Mr. G. Taylor on that interesting and little-known subject, the aborigines of Formosa. The writer has lived in the extreme south of the island, in daily communication with the people there for four years, and has therefore more experience of the southern type than all previous writers put together. He divides the Formosans south of Takow—that is, the southern peninsula—into four parts: the Faiwans, inhabiting the extreme south; the Pepohuans, or half-castes, of the plains; the Tipuns, inhabiting the great plain inland from Pilam; and the Ameirs, who have scattered themselves in small villages along the east coast down to South Cape. Of these, he can speak of the Paiwans from intimate personal observation; the Ameirs he is also acquainted with; but in the case of the others he has gathered his information from straggling members who have been found domiciled among the Paiwans. The present instalment is devoted wholly to the latter, *Paiwan* being the generic name of all the savage tribes on the south coast, and on the west up to Tang-Kang. These, at least, show no traces of the Negrito mixture which is supposed to exist among certain Formosan tribes. They are of a bright copper complexion, with black, straight hair, of a coarse texture. Mr. Taylor describes their physical features, their traditions of their origin, their arts (which are disappearing through contact with the Chinese), their superstitions and customs. They have a dim belief in the transmigration of souls, probably derived from Buddhist sources, and think that some souls are, as a mild punishment for minor misdeeds, condemned to pass into certain animals, where they remain for a time. The Subongs, a northern tribe of the Paiwans, are still almost absolutely independent, and still preserve the practice of head-hunting. They have known and wrought iron as far back as their traditions extend; they wear a ring in the lobe of the ear inserted in a hole formed by gradual expansion, and these ear-rings are the true mark of aboriginal descent, half-castes and Chinese not being allowed to wear them. One tribe of Paiwans, the Koaluts, has the custom of killing off infants when the tribe increases beyond a certain number, the saying being that whenever their tribe increases beyond the traditional limit they are certain to be visited by a pestilence. The paper is very interesting, and the whole promises to be a work of much ethnological value.

TELEGRAMS from Cairo and Aden announce the massacre by the Emir of Harrar, in the Somali country, of the members of an Expedition sent out by the Geographical Society of Milan. The Expedition was under the charge of Count Porro, and, besides the leader, the other victims were the Count

Montiglio, Prof. Sicata, Dr. Gethardi, Signori Romagnoli, Janin, Bianchi, and two servants. They were set upon by the Emir with 200 soldiers between Geldessa and Arton.

ACCORDING to information received in Paris, M. Barral and his wife, who had set out from Obok to explore a great part of Abyssinia and to establish commercial relations in the country, were murdered by the Danakils on the frontiers of Shoa.

THE *Izvestia* of the East Siberian branch of the Russian Geographical Society are appearing now in a new shape, similar to that of the *Izvestia* of the St. Petersburg Geographical Society. The last issued fascicule contains a short account of the geological excursions undertaken by the Society during the years 1883 and 1884. M. Dubroff continues the report of his journey to Mongolia, in which he gives much valuable topographical information concerning the valleys of the rivers Baikoy, Eder, Delgir-Moria, and Selenga, as also some ethnographical notes. M. Cherski contributes a paper containing the geological observations he has made during a journey from Irkutsk to the river Nijnia Tunguska. A good deal of attention was paid by the author to the geological features of the valley of the Middle Lena (from Kachug to Kirensk), which had been visited formerly by many explorers (Zlobin, Erman, Stehukin, Meglicki, Middendorff, Krapotkin, and Chekanefski), but never made a subject of special investigation. M. Cherski found there in the red sandstone of the valley some valuable exterior casts of shells similar to those of *Orthis*, but unfortunately the specimens were subsequently spoiled on their way to St. Petersburg, and therefore the question concerning the origin of the red sandstone still remains open. Finally he describes the Mammalia which now inhabit the valley of Nijnia Tunguska, as also those which inhabited it during the Palæolithic period, such as *Bos priscus*, *Bos primigenius*, *Rhinoceros tichorhinus*, *Elephas primigenius*, *Cervus canadensis*, and *Castor fiber*, the last three having only disappeared in recent time.

DR. KONRAD KELLER, of the Zürich University, is about to start on a scientific exploring expedition to Madagascar. The Swiss Ministers of Agriculture, Commerce, and Internal Affairs, the Mercantile Society of Zürich, and the East Swiss Commercial Geographical Society will jointly bear the cost of the expedition.

OUR ASTRONOMICAL COLUMN

THE PARALLAX OF ψ^5 AURIGÆ.—Herr W. Schur, of Strassbourg, has published in the *Astronomische Nachrichten*, No. 2723, a determination of the parallax of this double-star, deduced from a series of measures of position-angles and distances of the components made by him with the 6-inch refractor of the Strassbourg Observatory, on thirty evenings between January 14, 1883, and January 29, 1885. Transforming the observed position-angles and distances into $\Delta\alpha \cos \delta$ and $\Delta\delta$, and attempting, first, to determine corrections to the assumed proper motions of the brighter star (taken from Auwer's Fundamental-Catalog.), Herr Schur finds—

Correction to assumed proper motion in $\Delta\alpha \cos \delta = + 0''.075 \pm 0''.027$, $\pi = + 0''.161 \pm 0''.036$.

Correction to assumed proper motion in $\Delta\delta = + 0''.013 \pm 0''.021$, $\pi = - 0''.011 \pm 0''.096$.

Combining the two values of the parallax resulting from the differences of R.A. and declination respectively, there results $\pi = + 0''.140 \pm 0''.034$. An examination of the measures of this double-star, made from Herschel's time on, shows that there is no perceptible orbital motion in the system, but also shows that this comparatively large correction to the assumed proper motion in $\Delta\alpha \cos \delta$ is inadmissible. Putting, therefore, these corrections to the assumed proper motions = 0 in his equations, the circumstances being unfavourable for their determination, Herr Schur finds—

From differences of R.A., $\pi = + 0''.126 \pm 0''.036$

„ Decl., $\pi = - 0''.009 \pm 0''.094$

and, finally, $\pi = + 0''.111 \pm 0''.034$. It is to be remarked that this value refers to the fainter star of the pair (mag. 9.0, that of the other component being 5.3 according to Struve's estimate), in the observations the place of this star having been referred to that of the brighter one. Herr Schur thinks he is justified in asserting that the parallax of this star is at least $0''.1$,—a remarkable result considering the fixity of the object.